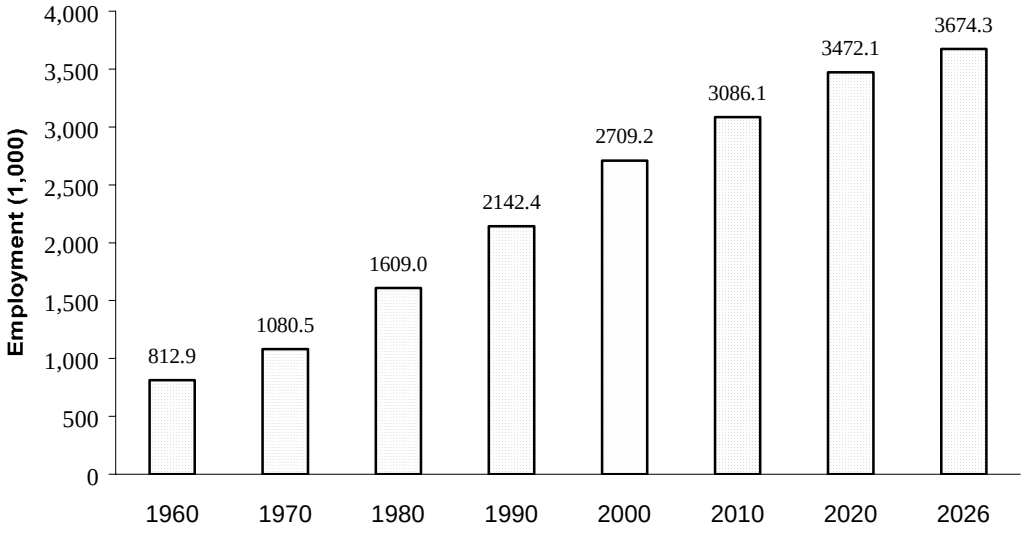
CHAPTER 3

Long-Term Forecast of Washington Wage And Salary Employment

IN 2001, THERE WERE 2.70 MILLION non-agricultural wage and salary jobs[1] in Washington State, about two-and-a-half times the state's employment level in 1970. Employment growth in the state averaged 3.0 percent per year between 1970 and 2001, far above the U.S. average annual rate of 2.1 percent during the same period.

Total Washington non-agricultural wage and salary employment is projected to reach 3.09 million in the year 2010 and 3.67 million by 2026 (Figure 3-1). This represents an average annual growth rate of 1.3 percent from 2001 to 2010, and 1.1 percent from 2010 to 2026. The forecast is reported in Table 3-1. Table 3-2 presents a more detailed, sector-by-sector forecast of wage and salary employment.

Figure 3-1
Washington Total Non-Agricultural Wage and Salary Employment



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[1] The labor market terms used in this chapter have distinctive definitions: The **Labor Force** consists of the employed and the unemployed. It includes only non-institutionalized civilians 16 years of age and older. **Total Employment** is the number of employed persons by place of residence, including the self-employed and persons working in agricultural jobs. Total employment excludes non-civilian military personnel. The **Unemployed** represents the number of persons in a given month who are not working but are actively seeking work, as indicated by unemployment insurance claims and responses to the Current Population Survey. **Non-Agricultural Wage and Salary Employment** describes the number of jobs by place of work in non-agricultural industries in a given month reported by firms in the monthly Current Employment Statistics industry survey. The survey data are then extrapolated to produce an estimate of total industry employment. Non-agricultural wage and salary employment was about 89 percent of total employment in 1995.

Table 3-1
Washington Labor Force and Employment

Year	Labor Force	Total Employed	Unemployed	Unemployment Rate(%)	Total Non-Agricultural Wage & Salary Employment
1970	1,417,100	1,285,900	131,200	9.3	1,080,500
1975	1,562,200	1,412,300	149,800	9.6	1,225,500
1980	1,984,600	1,828,200	156,400	7.9	1,609,000
1981	1,996,800	1,806,000	190,800	9.6	1,612,000
1982	2,024,500	1,778,900	245,600	12.1	1,568,800
1983	2,068,400	1,837,700	230,700	11.2	1,586,000
1984	2,050,400	1,856,900	193,600	9.4	1,659,700
1985	2,090,400	1,920,700	169,600	8.1	1,710,300
1986	2,198,500	2,017,800	180,700	8.2	1,769,900
1987	2,257,500	2,086,800	170,700	7.6	1,851,500
1988	2,315,800	2,172,800	142,900	6.2	1,941,100
1989	2,450,900	2,299,600	151,300	6.2	2,046,300
1990	2,537,500	2,413,000	124,500	4.9	2,142,400
1991	2,535,100	2,372,700	162,400	6.4	2,177,400
1992	2,648,200	2,446,800	201,400	7.6	2,221,900
1993	2,701,200	2,495,600	205,600	7.6	2,251,700
1994	2,716,400	2,542,900	173,500	6.4	2,304,100
1995	2,810,100	2,631,000	179,100	6.4	2,346,800
1996	2,878,600	2,691,600	187,000	6.5	2,415,600
1997	2,981,200	2,839,500	141,700	4.8	2,514,200
1998	3,037,200	2,892,500	144,700	4.8	2,594,700
1999	3,074,600	2,929,200	145,400	4.7	2,648,700
2000	3,045,800	2,887,900	157,900	5.2	2,709,200
2001	3,057,400	2,872,400	185,*00	6.1	2,702,500
Forecast					
2005	3,228,100	3,016,700	211,400	6.5	2,843,400
2010	3,457,600	3,261,100	196,500	5.7	3,086,100
2015	3,637,300	3,448,800	188,500	5.2	3,284,200
2020	3,790,200	3,616,000	174,200	4.6	3,472,100
2026	3,981,000	3,785,900	195,100	4.9	3,674,300
Change					
1970-1980	567,500	542,300	---	---	528,500
1980-1990	552,900	584,800	---	---	533,400
1990-2001	508,300	474,900	---	---	566,800
2001-2010	411,800	373,200	---	---	376,900
2010-2026	523,400	524,800	---	---	588,200
Growth Rates					
1970-1980	3.4%	3.6%	---	---	4.1%
1980-1990	2.5%	2.8%	---	---	2.9%
1990-2001	1.8%	1.8%	---	---	2.4%
2001-2010	1.3%	1.2%	---	---	1.3%
2010-2026	0.9%	0.9%	---	---	1.1%

Long-Term Employment Trends

Three important elements contribute to long-term employment trends. First is growth of the indigenous labor force through births, deaths, and aging. Second is the long-term level of unemployment. And third is the change in the size of the available labor force due to net migration (the difference between workers leaving and entering the state). Growth of the labor force due to net migration, in turn, depends heavily on the strength of the state economy relative to other parts of the country. The long-term labor force forecast in Chapter 2 of this report takes into account all these three elements. Based on these considerations, the Washington labor force is forecasted to increase by about 923,600 between 2001 and 2026.

At any given time, a portion of the labor force is unemployed. Since 1970, the Washington unemployment rate has ranged from a low of 4.7 percent in 1999 to a high of 12.1 percent in 1982. For the most part, the pattern of Washington's unemployment rate has tracked closely with the national business cycles and unemployment rate, but at a level about 1 to 2 percentage points above the national average.

The unemployment rate in Washington has been about 2 to 4 percentage points above the U.S. rate during most economic downturns, but much closer to the U.S. rate during recoveries and expansions. Over the last ten years, however, the difference between Washington's and the U.S. unemployment rates has narrowed. In the 1990s, the Washington-U.S. difference averaged about 0.5 percentage point. The persistent gap between the U.S. and Washington unemployment rates reflects in part the relatively high concentration of seasonal jobs in the state. The gap is also related to the large numbers of in-migrants who are attracted to Washington during economic expansions, which limits reductions in the state's unemployment rate during good economic times.

The Washington economy experienced strong growth in the second half of the 1990s, which drove the state unemployment rate below 5 percent. Between 2001 and 2026, the state unemployment rate is forecasted to gradually decline from 6.0 percent toward the 5 percent level. This implies that the trends and factors contributing to the narrowing gap between the U.S. and Washington unemployment rates will continue. By 2026, there will be 3.79 million employed Washington residents, an increase of about 0.91 million employed persons, or 32 percent, from the 2001 level.

Goods-Producing Employment

Manufacturing will maintain its vital presence in the Washington economy over the next 25 years. Continued growth in capital investment for productivity enhancements, both nationally and internationally, will generate strong demand for goods produced by Washington's "high-tech" manufacturing sectors. In addition, long-term demand for Washington's natural resource products will continue to grow as both the national and international economies expand.

Table 3-2

Washington Non-Agricultural Wage and Salary Employment by Industry

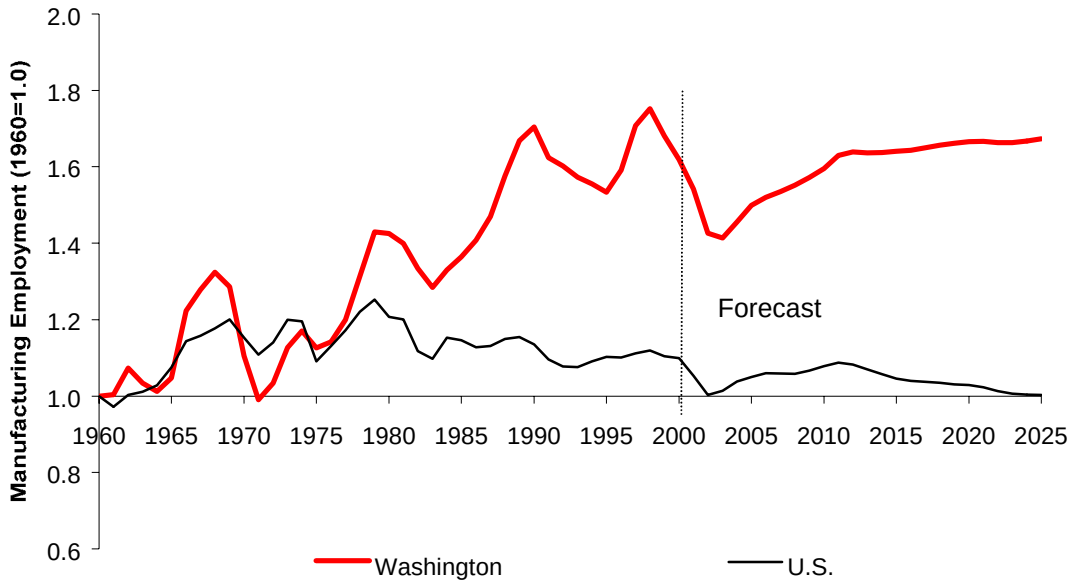
	Actual				Forecast						Average Annual Growth Rates (%)				
	1960	1970	1980	1990	2000	2005	2010	2015	2020	2026	1960-80	1980-90	1990-00	2001-10	2010-26
Manufacturing 1/	216,700	239,500	308,800	369,400	350,800	324,900	345,700	355,500	360,900	364,400	1.8	1.8	-0.5	-0.1	0.3
Non-durable Manufacturing	70,800	74,500	87,600	108,400	107,700	106,400	107,500	109,600	112,800	112,500	1.1	2.2	-0.1	0.0	0.3
Foods & Kindred Products	27,100	29,000	32,000	37,600	41,300	41,500	41,700	41,500	41,900	40,200	0.8	1.6	0.9	0.1	-0.2
Apparel Products	3,700	5,500	6,500	7,900	8,100	6,700	6,800	6,900	7,100	7,100	2.9	2.0	0.3	-1.7	0.3
Paper & Allied Products	17,900	19,800	17,600	18,100	15,600	14,500	14,300	14,000	13,900	13,400	-0.1	0.3	-1.5	-0.9	-0.4
Printing & Publishing	8,700	10,600	15,800	22,500	24,300	24,400	24,300	26,000	27,900	29,400	3.0	3.6	0.8	0.0	1.2
Chemical & Products 1/	10,600	5,900	8,700	13,200	6,100	6,900	7,100	7,400	7,600	7,800	---	---	---	1.5	0.6
Misc. Non-durables	2,800	3,700	7,000	9,000	12,300	12,400	13,300	13,800	14,400	14,600	4.7	2.5	3.2	0.8	0.6
Durable Manufacturing	145,900	165,000	221,200	260,900	243,100	218,400	237,900	245,800	248,300	251,800	2.1	1.7	-0.7	-0.2	0.4
Lumber & Wood Products	44,500	42,200	47,000	39,900	33,000	32,000	33,000	32,700	32,700	31,500	0.3	-1.6	-1.9	0.0	-0.3
Furniture & Fixtures	2,900	3,500	3,300	4,100	4,900	4,200	3,800	3,700	3,600	3,500	0.6	2.2	1.8	-2.5	-0.5
Clay, Glass, Stone Products	5,000	5,800	6,900	7,900	9,100	8,800	9,100	9,100	9,100	8,800	1.6	1.4	1.4	0.0	-0.2
Primary Metals	10,200	14,100	16,700	13,000	11,000	8,700	8,500	7,800	6,900	6,700	2.5	-2.5	-1.7	-2.5	-1.5
Fabricated Metal Products	6,700	7,400	11,700	12,200	15,000	14,900	16,400	16,700	17,000	16,800	2.8	0.4	2.1	0.9	0.2
Non-Electrical Machinery	5,700	10,000	15,000	20,500	25,300	24,600	30,300	30,400	30,700	30,300	5.0	3.2	2.1	1.8	0.0
Electrical Machinery	2,700	4,100	11,200	11,400	20,000	19,000	22,500	24,400	25,500	29,600	7.4	0.2	5.8	1.2	1.7
Aircraft & Parts	57,800	61,500	79,600	116,200	86,200	69,000	73,300	77,600	76,300	75,000	1.6	3.9	-2.9	-1.6	0.1
Other Trans. Equipment	7,800	13,300	18,700	14,800	15,100	12,700	13,500	13,100	13,000	12,900	4.5	-2.3	0.2	-1.1	-0.3
Instruments	---	---	---	14,700	14,700	15,700	17,200	18,500	20,000	21,300	---	---	0.0	1.6	1.3
Miscellaneous Mfg.	---	---	4,600	6,100	8,800	8,800	10,300	11,800	13,500	15,400	---	2.9	3.7	1.6	2.5
Mining	1,800	1,700	3,200	3,700	3,600	3,600	3,900	4,100	4,300	4,500	2.9	1.5	-0.3	0.8	0.9
Construction	44,600	53,400	92,900	117,300	161,000	163,000	178,000	191,800	205,400	218,700	3.7	2.4	3.2	1.0	1.3
Trans., Comm., & Utilities 2/	61,300	72,200	91,400	113,000	146,100	150,900	160,400	170,000	180,100	192,000	2.0	2.1	2.6	0.9	1.1
Wholesale Trade	53,600	64,600	100,600	128,500	155,400	158,700	172,400	184,100	195,000	205,800	3.2	2.5	1.9	1.0	1.1
Retail Trade	126,500	176,300	280,800	392,900	494,300	517,000	550,000	580,800	611,000	644,700	4.1	3.4	2.3	1.1	1.0
Finance, Ins, Real Estate	38,300	58,400	91,800	115,500	137,300	147,300	157,100	167,900	177,800	181,800	4.5	2.3	1.7	1.4	0.9
Services	103,500	169,700	308,500	504,300	777,600	868,400	973,400	1,056,300	1,133,300	1,223,500	5.6	5.0	4.4	2.3	1.4
Traded Services 1/	17,200	38,500	83,500	146,300	277,100	312,900	368,100	409,200	447,500	494,200	8.2	5.8	6.6	2.9	1.9
State & Local Government	115,900	186,500	263,000	323,900	413,300	439,200	472,800	504,000	534,100	568,500	4.2	2.1	2.5	1.4	1.2
Federal Government	50,700	58,100	67,900	73,700	69,900	70,400	72,500	69,800	70,200	70,400	1.5	0.8	-0.5	0.4	-0.3
Goods-Producing	263,100	294,600	404,900	490,400	515,400	491,500	527,600	551,400	570,600	587,600	2.2	1.9	0.5	0.2	0.7
Service-Producing	549,800	785,900	1,204,100	1,652,000	2,193,800	2,351,900	2,558,500	2,732,800	2,901,500	3,086,700	4.0	3.2	2.9	1.5	1.2
Total Non-Agricultural Emp.	812,900	1,080,500	1,609,000	2,142,400	2,709,200	2,843,400	3,086,100	3,284,200	3,472,100	3,674,300	3.5	2.9	2.4	1.3	1.1

1/ Significant break in series after 1990 due to reclassification of a portion of chemicals (SIC 2819) to commercial physical research (SIC 8731).
2/ Significant break in series in 1996 due to reclassification of a portion of Engineering Services (SIC 8711) to Sanitary Services (SIC4959).

However, internal efficiencies and technological changes leading to productivity gains will serve to hold employment growth in check. Some of the gains in output per worker will be market driven, arising out of increased competition in a world economy. Others will be dictated by necessity – the need to adapt to a more slowly growing labor force and, in some cases, growing scarcity of raw materials. In either case, the drive for greater efficiencies will constrain overall employment increases in goods producing sectors (Figure 3-2). Thus, manufacturing employment in Washington is expected to increase only slightly over the next 25 years – 0.3 percent per year for 13,600 over the entire period. The national economy, in contrast, is expected to lose manufacturing jobs throughout the forecast period.

Washington is expected to share the national outlook for slower growth in population and employment in the future. But employment growth in the state manufacturing sector will, contrary to the projected negative growth for the U.S., stay in positive territory, owing to the concentration of capital equipment production in Washington's primary export base and to the state's accessibility to the rising Asian markets.

Figure 3-2
Manufacturing Employment Trends: Washington and U.S.



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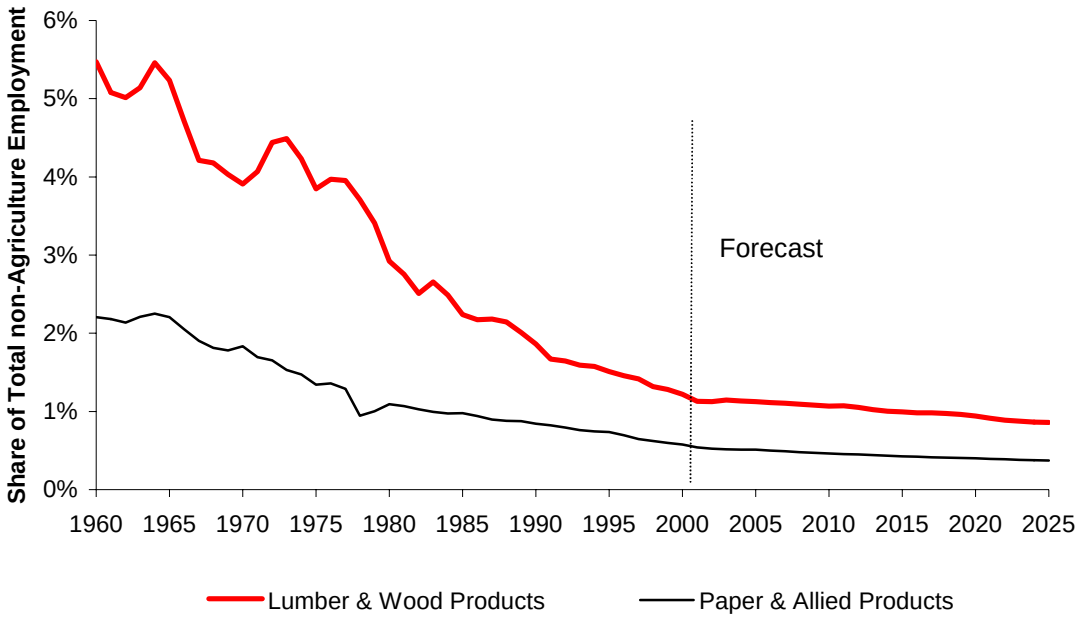
The need for major investments in plant and equipment, both domestically and in the developing nations, is destined to accelerate through the next decade. Accordingly, growth in machinery and electronics will set the tempo of Washington's manufacturing advance in both the short- and long-run. Aerospace employment had a down cycle beginning in the third quarter of 1998 and, after a pause in the first half of 2001, resumed job reductions. The current decline is expected to taper off by late 2002. Further downsizing in lumber and wood products, primary metals, food and kindred products, furniture and fixtures, and paper and allied products will be offset by positive job growth in the rest of manufacturing in the next two-and-a-half decades.

Lumber and Wood Products

Jobs in lumber and wood products are expected to decline slightly throughout most of the forecast period. This is basically a continuation of the long-term trend extending back to the end of World War II. In 1947, the lumber and wood products industry employed 58,800 workers, which accounted for 8.9 percent of all non-farm jobs and 34 percent of all manufacturing jobs in the state. In 2001, employment stood at 30,600 workers and the shares had fallen to 1.1 percent and 9.2 percent, respectively. By 2026, lumber employment is projected to total 31,500 workers, representing 0.8 percent of total non-agriculture jobs and 8.6 percent of manufacturing jobs in the state (Figure 3-3).

Figure 3-3
Share of Total Washington Non-Agricultural Employment: Lumber and Paper Industries



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The structure of the industry has changed dramatically in the post-war period. As with other goods-producing sectors, greater worker productivity has been a major factor behind a shrinking lumber and wood products employment base. Increased mechanization and newer logging and milling technology have decreased the number of workers needed for production.

Over the last decade a significant shift occurred on the supply side. In the late-1980s, policies corresponding to a heightened demand for environmental and wildlife protection effectively removed a sizable portion of the region's available stock of raw material from production. Federally owned forests, managed by the U.S. Forest Service and the Bureau of Land Management, were the focus of legal and regulatory efforts to comply with the Endangered Species Act. These measures were designed to protect the habitat of the Northern Spotted Owl, the Marbled Murlett, and various species of salmon. Consequently, timber sales from the federal lands in the state have declined substantially, heightening the costs of raw material for local sawmills and planing mills.

It is expected that lumber and wood products employment will continue to be affected by environmental constraints throughout the forecast period. These pressures are likely to force accelerated investment in resource-saving (i.e., making more out of the same amount of raw material) and laborsaving technology. Higher material costs and competition from both Canadian lumber manufacturers and alternative building materials such as steel and composites will result in added emphasis on offsetting efforts to improve internal production efficiencies. These factors all point to a constrained demand for labor.

Paper and Allied Products

Employment in paper and allied products declined from 18,100 in 1990 to 14,600 in 2001, and is expected to dip slightly to 13,400 by 2026. In relative terms, the industry's employment share will drop from 0.5 percent of total non-agricultural wage and salary employment in 2001 to 0.4 percent in 2026. The industry is highly capital-intensive, and gains in productivity will enable output to climb while employment declines.

Many of the same forces affecting lumber and wood products apply to the pulp and paper industry. Environmental laws have affected processing requirements, and limits in harvesting have similarly affected supply. Indeed, these factors have contributed to several plant closures in the state during the past decade. To its advantage, the paper industry is somewhat more flexible than lumber in acquiring raw resources. Chips can be imported and recycled paper can be used. Many paper plants already process a significant amount of recycled materials.

A significant portion of the industry's production in Washington is exported. But rising competition from Asian and Canadian operators will provide a dampening effect on the future growth of this industry in the state. On the other hand, environmental demands may result in accelerated investment in resource-saving and pollution abatement technologies. Adoption of these technologies will enhance the industry's viability in the region.

Aerospace

Aerospace employment in Washington increased 42 percent from 79,800 in December 1995 to 113,400 in July 1998. However, by 2001 industry employment had fallen 23 percent to 87,000. Aerospace employment in the state is expected to further retrench over the forecast period as productivity gains and use of the production capacity in other states and nations more than offset output growth. Pressures are driving the emphasis on cost control within the industry, and on operating margins as Boeing competes head-on with Airbus Industries and other potential foreign producers.

Boeing had two major acquisitions in the 1990s. The first was the buyout of Rockwell International's aerospace and defense operations in 1996; and the second was a merger deal with McDonnell Douglas in 1997. Both significantly strengthen the company's defense and space businesses. In November 2000, Boeing created an Air Traffic Management Division, enacting on the company's diversifying strategy to enhance business viability and growth. In September 2001 the company moved its corporate headquarters to Chicago.

The prospect for long-term demand is bright. Boeing predicts that the world air traffic will grow 4.9 percent per year on average over the next two decades. A total of 22,300 new jets worth $1.5 trillion is envisioned, requiring output of 1,115 planes a year by the world's commercial aircraft manufacturers. A third of the demand is expected to emanate from replacement aircraft because of fuel inefficiency, excessive noise, or obsolescence. The remaining two thirds will be generated by new growth in air travel, particularly in the Asia-Pacific Rim area. A disproportionate amount of revenues will come from Asian carriers because of their growing demand for the more expensive two-aisle, long haul aircraft. Two-thirds of all new aircraft deliveries are expected to go to carriers outside the U.S.

Prospects of aerospace employment in the state will be limited by several factors. One major factor is foreign competition, particularly from Airbus. In the medium to long-term, potential competition may come from Russia and Japan. And even some Pacific Rim nations have been developing manufacturing capabilities and may present competition to the local suppliers and subcontractors. The second factor is productivity. Facing the challenge of foreign competition, Boeing recognizes that productivity of its workers must continue to improve. Higher productivity means that job growth will be restrained. And, third, in order to gain new aircraft orders from foreign carriers, Boeing will likely continue to outsource certain components to manufacturers in the foreign carriers' home countries. Although the outsourcing practice appears to limit employment growth in Washington, it will also prevent the loss of market share (and jobs) to Airbus and other competitors.

Other Transportation Equipment

Other than aerospace, Washington's transportation equipment production consists of shipbuilding, boat building, and manufacturing of vehicles (primarily heavy trucks and trailers). Each segment of this industry faces very different market forces and prospects. Construction of the cross-Sound ferryboats in the past few years represented a major revenue source for the shipbuilding industry in the state. Repealing of the motor vehicle excise tax I-695 in 2001 threatens the shipyard jobs as it forces the state ferry system to curtail services and building of new vessels. Fortunately, spin-off from the Navy's Everett Homeport is generating substantial overhaul and maintenance work now for local shipyards.

Luxury yachts and other pleasure craft have seen healthy business growth in the past decade and can be expected to move in tandem with the general economy. In addition, sales of heavy trucks and trailers can be expected to increase over time with the growth in capital investment at home and abroad.

Primary Metals

Washington's primary metals industry is dominated by aluminum smelting and refining. The availability of cheap, abundant, and reliable electrical power that is essential in the electrolytic reduction process has long been a factor in siting aluminum plants in the region. Energy represents about 30 percent of aluminum production costs.

The region's aluminum producers enjoyed a distinct competitive advantage with respect to energy costs until a big electric rate increase in 1979. To remain competitive, the Bonneville

Power Administration (BPA) agreed to tie power rate changes to the prevailing world price of finished aluminum and to participate in new plant and equipment investments to enhance overall operating efficiencies. This largely restored the industry's competitive position during the subsequent periods of high demand.

Several unsettling factors affected the picture in the early 1990s. World production exceeded demand and sales were maintained only by international agreement to address weakened market conditions. Russia possesses a significant aluminum production capacity. The prices fell precipitously in 1992-93 as the very weak ruble and the deteriorated domestic demand caused Russia to flood the world market with cheap aluminum ingots. Demand strengthened in 1994-99 and some idled capacity was put back on line.

The price and availability of electricity will clearly play a significant role in determining the future of aluminum production in Washington. As the regional economy grows, aluminum producers will see more competition for electricity use from residential, commercial, and other manufacturing consumers. In an evolving regime of energy deregulation, the electricity rates in the state will approach parity with those elsewhere in the western states. The 2000-01 energy price hikes led to full or partial closings of all of Washington's smelters. How much of the closed production capacity will be brought back on line will depend upon a resolution to the energy situation and aluminum prices in the international market.

Actually, the increased competition for electricity has already been realized. In late 1993, the BPA reduced by a quarter the amount of power available to aluminum producers and raised the price of electricity by 20 to 25 percent. In 1996, aluminum producers in the region negotiated a new contract with the BPA. The new agreement requires, for the next five years, that aluminum companies buy the BPA's electricity at fixed rates, but at the same time it allows the companies to purchase electricity from other suppliers.

Over the past decade-and-a-half the industry has made significant strides in increasing efficiencies and enhancing competitiveness. Demand for primary and fabricated metal should remain strong throughout the forecast period, given the bullish outlook for both consumer and industrial durable goods. But under the pressure of growing foreign competition and rising input costs, employment in the state is expected to decline in the future.

Machinery and Instruments

Growth of Washington's machinery and instruments sector has been strong over the past 20 years, and will continue to show strength for the foreseeable future. Combined employment in electrical and non-electrical machinery and instruments manufacturing in the state has risen at a robust 5 percent average annual pace since 1970 – almost twice the pace of total employment growth. Of particular note has been the explosive growth in electronics, and scientific and medical instruments.

In 2001, machinery and instruments industries in Washington employed 60,000 workers, accounting for 17.1 percent of total manufacturing jobs in the states. The forecast predicts a 35

percent employment increase in these sectors between 2001 and 2026. By 2026, about 22 percent of the state manufacturing jobs will be in these industries.

Market adjustments in the semiconductor industry have brought about several restructurings in the past decade. But the demand for computer hardware is expected to remain strong throughout the forecast period: the need of businesses to increase productivity requires the application of computer technology and electronic devices as an integral part of the daily work environment; and the use of computers in schools and homes has also become commonplace.

The state's prospect for attracting and retaining high-technology manufacturing are likely to remain positive given the thrust of state and local economic development efforts. Cases in point include the Intel research and development facility at DuPont, and the WaferTek plant at Camas, which opened in 1997.

Non-electrical machinery production is keyed largely to farm, construction, forest products, and other heavy industries. The outlook for this sector is bright, although below that of the electronics industry. Overall investment levels are expected to continue strong. At the same time, new and expanding markets in Europe, Asia, and Central and South America are strong possibilities in the long run given the accelerating trend toward greater industrialization in these economies.

Food Processing

The diversity of Washington's farm production is expected to continue. Major products in the state include frozen potatoes, apple juice, and processed seafood. In addition, roast coffee and coffee products are a growing segment. Increasing uses of mechanization, biotechnology, online telecommunication, global positioning systems, and remote sensing will characterize the changes in the industry's production and distribution processes over the long run. But in contrast to sharp declines projected nationally to 2026, employment in Washington's food processing sector is expected to remain flat as the markets for the industry's products continue to expand, both domestically and overseas.

Crop production will drive the industry due to the importance of the state's fruit and vegetable harvests. Long-term prospects for processed fruits, vegetables, and specialty products look very strong. Some labor market and demographic trends favorable to raising the demand for convenience foods include: a growing number of households having two or more workers; and elderly population (age 65 years and older) increasing at a rate more than twice that of the total population.

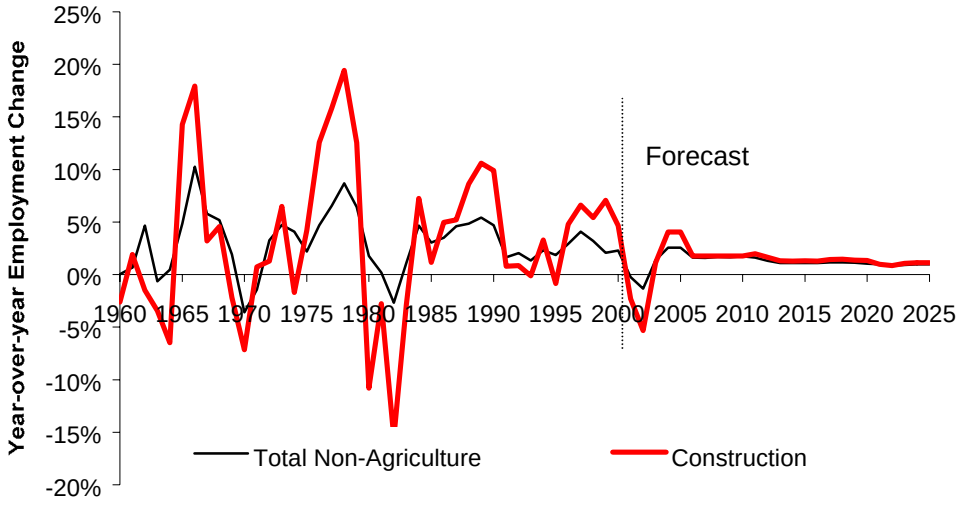
Foreign exports are assumed to constitute ever-larger proportions of total sales over the long run. This is expected for both fresh and processed products. Niche markets will play increasingly important roles, aided by the growing popularity of western style foods in the developing countries. The opening of economies in Asia to free trade will add additional opportunities to expand export markets.

Construction

Historically, construction activity in the state has been very volatile. Short-term demand is sensitive to interest rates and the business cycle. In addition, large public works projects can exert a powerful short-term influence. In the long-term, however, the demand is primarily determined by construction costs, demographic changes, and employment growth. Population growth mainly affects the need for residential housing, whereas employment growth determines commercial buildings and non-building construction.

In spite of its many short-term ups and downs, the long-term average level of construction employment relative to total employment has actually been quite stable. Over the past 30 years, construction employment has been about 5.2 percent of total non-agricultural employment, with fluctuations occurring around this level during boom and bust periods. The lowest ratio of construction employment to total employment during the past 30 years was 4.7 percent, occurring on several occasions during economic slowdowns. The highest level of this ratio was 6.6 percent in 1979, when an economic boom was underway and the Washington Public Power Supply System had five nuclear power plants under construction. As of 2001, construction industry accounted for 5.8 percent of total non-farm employment, averaging 157,300 jobs. Construction activity in the 1980s was brisk, spurred by a surging investment in commercial projects (i.e., office, industrial, and retail space) and the booming housing market in the second half of the decade. As a result, average growth in Washington construction employment increased to 2.4 percent per year over the decade. Construction employment again rose at a 3.3 percent annual rate between 1990 and 2001, especially since 1995 when rising personal income and low interest rates stimulated housing activities.

Figure 3-4
Relative Growth in Construction and Total Non-Agricultural Employment



However, the high rate of growth in the 1990s will not sustain in the long run. Throughout the forecast period population growth is predicted to gradually slow down. Likewise, the growth rate of total employment is forecast to fall gradually. These two factors suggest that both the residential and non-residential demand for construction employment also will increase at a slow rate over the forecast horizon. Some of the decline will be offset by rising incomes and the subsequent demand for more expensive housing and for remodeling/replacement. In addition, the prospects of low, stable long-term interest rates and inflation in the future would contribute to raising the levels of investment in residential and commercial buildings.

The future of the construction industry will be influenced by technology changes: telecommunication, teleconferencing, home and mobile offices, telecommuting, Internet shopping, and inventory management. These factors will exert significant influence on both the quantity and the types of building space demanded.

Taking into account all the positive and negative factors affecting the industry's future, the forecast suggests that construction employment will retain its share of overall employment. Construction employment as a share of total non-agricultural wage and salary employment will stay in the 5.5-6.0 percent range.

Service-Producing Employment

The relationship between goods-producing industries and service producing sectors has changed substantially over the past 30 years. Increased productivity has slowed the pace of job growth in the goods producing sectors, while heightened demand has accelerated job growth in consumer and business services, retail trade, and other non-manufacturing sectors. Also of note is that, during the past 15 years, there has been tremendous growth in professional and high-tech services employment in the state.

In 1960, non-goods producing jobs represented about two-thirds of total non-agricultural wage and salary employment. By 2001, the share had risen over 80 percent. It is expected to rise further in the forecast to more than 84 percent by 2026 (Table 3-3).

Transportation, Communication, and Utilities (T.C.U.)

Over the past 30 years, the share of total non-agricultural employment represented by T.C.U. has steadily declined from 6.7 percent in 1970 to 5.4 percent in 2001. Much of this is due to technological advances in industries such as trucking, shipping, air transportation, and telecommunications. These advances have greatly increased capital intensity and labor productivity in these industries, resulting in large gains in output possible with a less corresponding increase in employment.

Telecommunication is the industry where most new products/services will be seen in the next decade. This occurs mainly as a result of the integration of voice, data, and video services through wire line (coaxial or fiber optic cable) or wireless (radio systems, microwave, or satellites) networks. Almost every aspect of telecommunication services (including local

exchange, cellular and Internet telephony, broadband networks, and global information flows) will undergo paradigm shifts. In addition, the U.S. Telecommunication Act of 1996 has just started showing its effect on removing barriers to local competition.

However, in the past few years the industry has spent heavily on building and expanding infrastructure. The "race" to be the first and fastest to build infrastructure in the absence of revenue generation and profitability has led to gross over-capacity, investor burnout, bankruptcies, and industry restructuring. It may take some time for the current unused capacity to be absorbed and then for the industry investment to revive.

The deregulation of most T.C.U. industries has resulted in higher operating efficiency and productivity gains. The forecast calls for the benefits of deregulation and further technological improvements, especially in communications, to sustain the demand for T.C.U. services and thus for the industry employment to increase at a healthy pace. T.C.U. jobs as a share of total non-agricultural employment is expected to stay around 5.2 percent over the forecast period.

Wholesale Trade

Although the function of the wholesale trade sector is selling merchandise to retailers (or other wholesalers), wholesale trade employment has grown at a substantially slower rate than retail trade employment over the past 30 years. This reflects the adoption of productivity-enhancing technologies and improvements in business practices such as computerization, sophisticated inventory controls, and more efficient systems of distribution and delivery. Productivity and management improvements are expected to continue. Vertical integration in the past decade, as evidenced by the evolving warehouse/discount retailing, one-stop shopping, and specialty superstores has chipped away some employment growth in wholesale industry.

In 2001, wholesale trade employment in the state reached 156,300. It is predicted that the industry employment will grow at an average annual rate of 1.1 percent over the two-and-a-half decades after 2001 (Figure 3-5).

Retail Trade

Retail trade has increased its share of the state total employment over the past 30 years, primarily reflecting increases in income and spending power. During the 1960s and 1970s, growth of household income came from increases in wages and rising female labor participation. In the 1980s, little or no growth of real wages occurred, but spending power still increased as a result

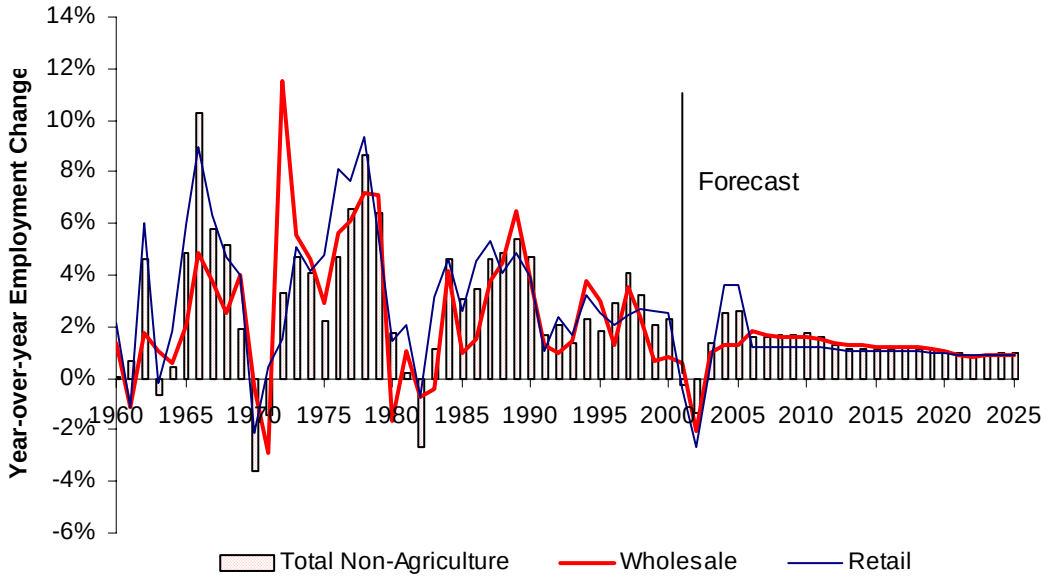
Table 3-3

Percent Share of Total Non-Agricultural Wage and Salary Employment by Industry

	Actual					Forecast				
	1960	1970	1980	1990	2000	2005	2010	2015	2020	2026
Manufacturing 1/	26.7%	22.2%	19.2%	17.2%	12.9%	11.4%	11.2%	10.8%	10.4%	9.9%
Non-durable Manufacturing	8.7	6.9	5.4	5.1	4.0	3.7	3.5	3.3	3.2	3.1
Foods & Kindred Products	3.3	2.7	2.0	1.8	1.5	1.5	1.4	1.3	1.2	1.1
Apparel Products	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2
Paper & Allied Products	2.2	1.8	1.1	0.8	0.6	0.5	0.5	0.4	0.4	0.4
Printing & Publishing	1.1	1.0	1.0	1.1	0.9	0.9	0.8	0.8	0.8	0.8
Chemical & Products 1/	1.3	0.5	0.5	0.6	0.2	0.2	0.2	0.2	0.2	0.2
Misc. Non-durables	0.3	0.3	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4
Durable Manufacturing	17.9	15.3	13.7	12.2	9.0	7.7	7.7	7.5	7.2	6.9
Lumber & Wood Products	5.5	3.9	2.9	1.9	1.2	1.1	1.1	1.0	0.9	0.9
Furniture & Fixtures	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Clay, Glass, Stone Products	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.2
Primary Metals	1.3	1.3	1.0	0.6	0.4	0.3	0.3	0.2	0.2	0.2
Fabricated Metal Products	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5
Non-Electrical Machinery	0.7	0.9	0.9	1.0	0.9	0.9	1.0	0.9	0.9	0.8
Electrical Machinery	0.3	0.4	0.7	0.5	0.7	0.7	0.7	0.7	0.7	0.8
Aircraft & Parts	7.1	5.7	4.9	5.4	3.2	2.4	2.4	2.4	2.2	2.0
Other Trans. Equipment	1.0	1.2	1.2	0.7	0.6	0.4	0.4	0.4	0.4	0.4
Instruments	---	---	---	0.7	0.5	0.6	0.6	0.6	0.6	0.6
Miscellaneous Mfg.	---	---	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
Mining	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Construction	5.5	4.9	5.8	5.5	5.9	5.7	5.8	5.8	5.9	6.0
Trans., Comm., & Utilities 2/	7.5	6.7	5.7	5.3	5.4	5.3	5.2	5.2	5.2	5.2
Wholesale Trade	6.6	6.0	6.3	6.0	5.7	5.6	5.6	5.6	5.6	5.6
Retail Trade	15.6	16.3	17.5	18.3	18.2	18.2	17.8	17.7	17.6	17.5
Finance, Ins, Real Estate	4.7	5.4	5.7	5.4	5.1	5.2	5.1	5.1	5.1	4.9
Services	12.7	15.7	19.2	23.5	28.7	30.5	31.5	32.2	32.6	33.3
Traded Services 1/	2.1	3.6	5.2	6.8	10.2	11.0	11.9	12.5	12.9	13.5
State & Local Government	14.3	17.3	16.3	15.1	15.3	15.4	15.3	15.3	15.4	15.5
Federal Government	6.2	5.4	4.2	3.4	2.6	2.5	2.3	2.1	2.0	1.9
Goods-Producing	32.4	27.3	25.2	22.9	19.0	17.3	17.1	16.8	16.4	16.0
Service-Producing	67.6	72.7	74.8	77.1	81.0	82.7	82.9	83.2	83.6	84.0
Total Non-Agricultural Emp.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Significant break in series after 1990 due to reclassification of a portion of chemicals (SIC 2819) to commercial physical research (SIC 8731).
2/ Significant break in series in 1996 due to reclassification of a portion of Engineering Services (SIC 8711) to Sanitary Services (SIC4959).

Figure 3-5
Relative Growth in Trade and Total Non-Agricultural Employment



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of continued growth in the labor earnings of women. In addition to providing higher household income, increases in the number of two-income households also reduced the time available for preparation of meals at home, further fueling growth of eating and drinking establishments, the largest and fastest growing retail trade sector.

Factors affecting the retail employment forecast include the expectations that future wage increases will not match those of the 1960s and 1970s, and increases in total personal income will be slower in the next 25 years than was the case between 1970 and 2001 (see Chapter 4). In addition, since there are now already many women in the labor force, future growth of two-income households is expected to slow down.

Other trends in retail trade will also act to reduce employment growth in that sector. Increasing worker productivity and economies of scale, generated by warehouse-type superstores, will continue to offset employment growth to some extent. Another uncertainty with respect to future retail employment growth is the evolution of electronic shopping through the Internet. The effect of e-tailing is double-edged: it brings to Washington retailers, big or small, relatively easy access to national and even international markets; but at the same time it subjects local retailers to more competition from out-of-state retail operations. General merchandise retailers will be more affected by this evolution of e-tailing than those emphasizing specialty goods and services.

Taking into account the factors discussed above, the forecast calls for retail trade employment to continue to rise, but at a slower rate than in the past. Consequently, retail trade's share of total wage and salary employment over the forecast years will remain in the 17.5-18.0 percent range.

Finance, Insurance, and Real Estate (F.I.R.E.)

Historically, employment in F.I.R.E. has grown slightly faster than total wage and salary employment, reflecting the growing population and rising real personal income. In the late 1980s and most of the 1990s, this trend was reversed due to the slowing population growth, overbuilding of commercial real estate, productivity improvements, mergers, and a shift toward electronic banking. Offsetting these negative factors were the inter-temporal booms in mortgage financing/refinancing and the expanding services that financial institutions provide. The low and stable interests, accompanied by the prospering security markets, stimulated the growth in investment banking and brokerage businesses.

In the late 1990s, vigorous income growth and low mortgage interest rates gave rise to real estate financing activities. It also appeared that retrenchments and consolidations of the financial industry had quieted down. As a result, employment in F.I.R.E. increased steadily.

In the next two decades, aging of the population will raise the demand for F.I.R.E. services. This happens as the baby boom generation moves into the age cohorts that save a high proportion of their income, and as the elderly population with high assets ownership grow.

After 2001, employment in F.I.R.E. will increase at a slower rate than in the past. Computerization and other advances will increase growth in output per worker in F.I.R.E. and these productivity increases will to some extent offset the increasing demand for F.I.R.E. services, which result from higher incomes, demographic changes, and the expanding banking, finance, and insurance services/products. Trends toward electronic banking, interstate banking, and the proliferation of smaller community banks are uncertainty factors affecting employment growth in this sector.

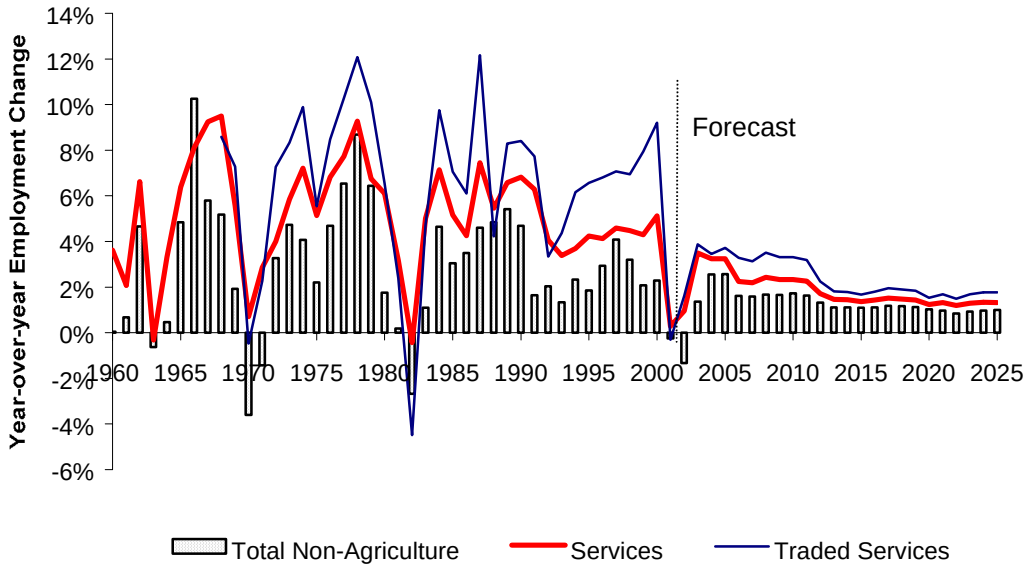
Services

Services have been the fastest growing industry division of the economy in recent years, and this is expected to continue during the forecast period. Services employment grew an average 5.2 percent per year in the past 30 years. In the future, services employment growth is expected to slow significantly to an annual rate of 2.3 percent from 2001 to 2010, and further slow to 1.4 percent per year through 2026 (Figure 3-6). However, services employment still remains the fastest growing sector throughout the forecast period. Its share of total wage and salary employment will grow from 28.9 percent in 2001 to 33.3 percent in 2026.

Traded services, including legal services, business services, engineering, management, and accounting services, represent more than one-third of total services employment. This group has been growing faster than the rest of the services division, and is predicted to lead this division in the future. By 2026, the traded services will have grown to 40 percent of all services employment. Growth in the traded services can be attributed to numerous factors. Much of this growth reflects the trend by businesses to contract out certain practices. The ever-increasing complexity of the legal, human resource, marketing, information technology, and e-commerce fields has resulted in more and more firms out-sourcing these functions.

Another factor in the growth of business services has been the increasing use of temporary personnel to perform specialized tasks or to meet peak periods of demand. As a result, there has been rapid growth in employment at temporary help and employment agencies.

Figure 3-6
Employment Growth: Total Non-Agriculture, Services, and Traded Services



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The growth of prepackaged software industry in the state has been phenomenal. A Washington company, Microsoft Corporation, is the largest firm in this industry. An impact study by Conway and Associates indicates that Microsoft was the state's seventh largest employer in 1995. According to the report, each of the almost 9,000 Microsoft jobs leads to 3.4 other jobs in the state. Including stock options, the average employee at Microsoft earned more than $138,000 in 1995. The company has been growing briskly, both domestically and in foreign markets. Although the same pace of growth will not last indefinitely, the company does plan to add as many qualified employees as they can find in the next few years. The rapid growth of high-wage jobs at Microsoft and other software development companies around the state has contributed to the growth as well as diversify of the state economy.

Although other services are not expected to grow as fast as traded services, they will continue to grow significantly faster than total wage and salary employment. Health services employment has experienced fast growth in the past; future growth, however, is expected to be only slightly above average. Historical increases in health services jobs reflect an increasing commitment of society's resources to health care. Future increases in the proportion of national income spent on health care depend on such factors as aging of the population, cost pressures, and development of advanced treatment procedures and new drugs.

Personal and repair services will probably be the weakest of the service subsectors, while hotels, amusement and recreation, education, and social services will be relatively strong.

State and Local Government

Education is a major function of state and local government. State and local government employment grew faster than total employment between 1958 and 1972, as the Baby Boom generation moved through the educational system. Growth in the primary school age (i.e., age 5-17) population began to slow down in the second half of the 1990s. However, the slowdown in the primary school age population comes at a time when growth in the college-age population (age 17 to 22) will be increasing. The increase in the college-age population will lead to adding employment in higher education. This trend is enhanced by the evolving New Economy, whose information-intensive and productivity-driven growth demands workers with post-secondary education.

Several factors are working together to slow down the growth of government employment. The first is passage of Initiative 601 in 1993, which limits growth by tying spending to the growth of total population and inflation. The second is a general sentiment across the nation that government has grown too large to be effectively managed, and thus the increasing practices of outsourcing government functions to private providers. Most of the growth in the combined "state and local government" sector is expected to occur in local government employment.

Overall, the proportion of total wage and salary employment represented by state and local government is expected to remain flat over the next 25 years, despite the projected increases in the demand for services provided by the public sector.

Federal Government

Federal government employment has declined as a percentage of total employment throughout the post-World War II era. This trend is expected to continue; although some areas of federal government activity, such as the postal service and park service, are expected to increase along with the population. In the past few years, base closures in other states transferred military personnel to Washington; these shifts helped but were not enough to offset declines in other areas of federal civilian employment. In the future, federal government employment level in the state is expected to remain essentially unchanged.

Employment Diversity

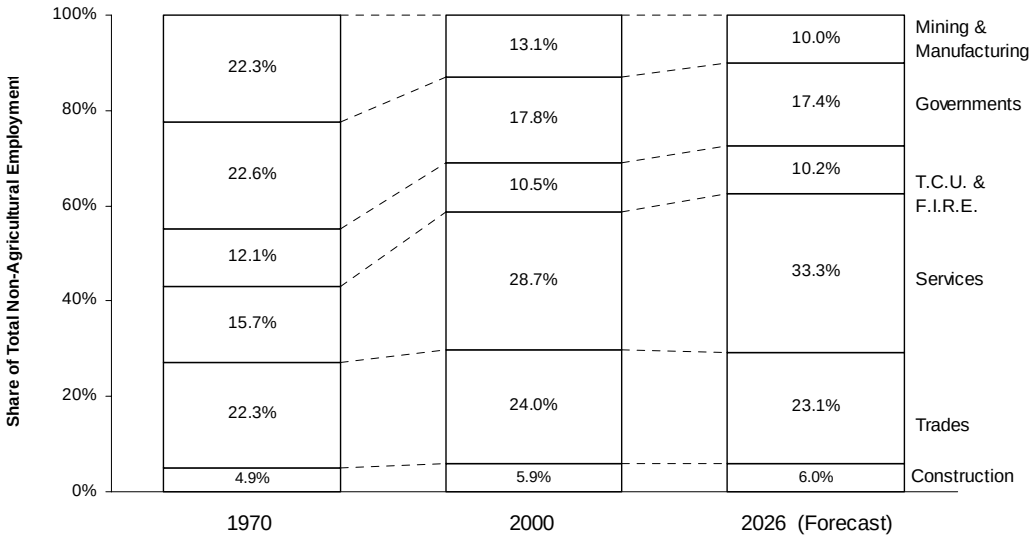
In 1960, manufacturing and government accounted for almost half of Washington's wage and salary employment. Manufacturing employment at that time was dominated by aerospace employment and lumber and wood products employment. These two manufacturing industries accounted for almost half of manufacturing employment and close to 13 percent of total wage and salary employment. Government, excluding the armed forces, employed more than 20 percent of total wage and salary workers in the state. A third of government employment in 1960 was federal civilian workers, basically reflecting the strength and size of national defense-related establishments in Washington at that time.

For decades, the overall state economy moved in concert with the changes in its military, aerospace, and timber industries. Booms and busts in these industries frequently would induce the same condition in the overall state economy. However, this relationship has changed substantially. Government employment receded to about 18 percent of total wage and salary employment in 2001. This mainly reflects shrinkage in federal government employment, particularly in defense. Aerospace and timber industries now account for less than 5 percent of the state's non-farm employment. Manufacturing and government employment constituted less than one-third of non-agricultural employment in 2001, compared to about one-half in 1960.

Manufacturing employment in the state is projected to grow significantly slower than total employment in the next 25 years. As a result, the manufacturing share of total non-agricultural employment is expected to decline from 12.9 percent in 2001 to 9.9 percent by 2026 (Figure 3-7). The forecast calls for a reduction in the employment share of lumber and wood products industry from 1.2 percent in 2001 to 0.9 percent in 2026. Also, the aerospace industry's share of total state employment is projected to decline from 3.2 percent in 2001 to 2.0 percent by 2026.

The fastest growing industry division of the Washington economy has been services. This reflects to a large degree the shift in consumption from goods to services that has taken place nationwide. However, the fastest growing services are business services and engineering, management and accounting services, both are components of traded services. The services division is expected to continue to gain employment share throughout the forecast period. By 2026, services will constitute about one-third of total wage and salary employment. That means services employment will be larger than manufacturing and government employment combined by the end of the forecast period.

Figure 3-7
Distribution of Washington Employment by Industry



T.C.U. = Transportation, Communication, and Utilities. F.I.R.E. = Finance, Insurance, and Real Estate.

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